

Wafi Gravity Questions – Chapter 12

- 1) Why did Newton think there was a force acting on the moon? a. Because the moon always keeps one side toward the earth
☒ b. Because the moon moves in a curved path c. Because there is no air on the moon d. Because the moon is moving
e. all of the above
- 2) Newton had the insight to see that the a. moon always keeps one side toward the earth. b. moon orbits the earth. c. moon is moving.
☒ d. force on the moon has the same nature as the force on an apple. e. none of the above
- 3) Newton hypothesized that the moon a. is a projectile. b. is actually attracted to the earth.
c. is falling around the earth. d. has tangential velocity that prevents it from falling into the earth. ☒ e. all of the above
- 4) Newton reasoned that the gravitational attraction between the earth and the moon must be a. directly proportional to distance.
☒ b. reduced by distance. c. the same at all distances. d. independent of distance. e. all of the above
- 5) Since the earth is attracted to the sun, why doesn't it fall into the sun? ☒ a. Because it has a large tangential velocity b. Because there is an equal force holding it away from the sun c. Because it has too much mass to move toward the sun d. Because it has too much inertia to move toward the sun e. all of the above
- 6) The gravitational force between two masses a. is always an attraction. b. depends on how large the masses are. c. depends inversely on the square of the distances between the masses. d. depends on a universal gravitational constant. ☒ e. all of the above
- 7) If the mass of the earth increased, with no change in radius, your weight would ☒ a. increase also. b. decrease. c. stay the same.
- 8) If the radius of the earth decreased, with no change in mass, your weight would ☒ a. increase. b. not change. c. decrease.
- 9) If the earth's mass decreased to one half its original mass, with no change in radius, then your weight would a. decrease to one quarter your original weight. ☒ b. decrease to one half your original weight. c. stay the same. d. none of the above
- 10) According to Newton's laws, a rock and a pebble will fall at the same acceleration in a gravitational field because a. the gravitational force on each are the same. ☒ b. the gravitational acceleration is the same for both. c. both a and b d. none of the above
- 11) A 400-N woman stands on top of a very tall ladder so she is one earth radius above the earth's surface. How much does she weigh?
a. Zero ☒ b. 100 N c. 200 N d. 400 N e. none of the above
- 12) A very massive object A and a less massive object B move toward each other under the influence of mutual gravitation. Which force, if either, is greater? a. The force on A b. The force on B ☒ c. Both forces are the same.
- 13) By noticing that Uranus's orbit is perturbed and by using the law of gravitation, two astronomers independently discovered a. Uranus has several moons. b. Pluto. ☒ c. Neptune. d. exceptions to the law of gravitation. e. the law of gravitation fails at large distances.
- 14) The force of gravity acting on you will increase if you a. burrow deep inside the planet. ☒ b. stand on a planet with a radius that is shrinking. c. both a and b d. none of the above
- 15) The force of gravity on you is greatest when you are standing a. just above the earth's surface. b. just below the earth's surface.
☒ c. on the earth's surface.
- 16) The reason the moon does not fall into the earth is that the a. earth's gravitational field at the moon is weak. b. gravitational pull of other planets keeps the moon up. ☒ c. moon has a sufficiently large orbital speed. d. moon has less mass than the earth. e. none of the above
- 17) A lunar month is about 28 days. If the moon were closer to the earth than it is now, the lunar month would be ☒ a. less than 28 days. b. more than 28 days. c. unchanged at 28 days.